

REMARKS

In the first Office Action of April 10, 2005, claims 1-14 were rejected under 35 U.S.C. 103(a) as unpatentable over MacDonald (U.S. Patent No. 3,631,238) in view of Weiner et al. (U.S. Patent No. 6,642,726) and Lin et al. (U.S. Patent No. 6,774,648).

Applicants' invention is directed to a method and apparatus for enhancing passive voltage contrast on a die surface being scanned by a primary electron beam such as one generated by a scanning electron microscope. In accordance with the invention, the die is mounted on a holder and scanned repeatedly by the electron beam while the incident angle of the electron beam is varied until maximum passive voltage contrast is achieved. To facilitate the process, the die is mounted on a stage that permits the incident angle to be adjusted. Method claim 1 and apparatus claim 13 have been amended to emphasize these features of applicant's invention. New claims 15-18 have been added.

As indicated by its title, the MacDonald patent is directed to a method for quantitatively measuring potential on a surface by detecting Auger electronic peaks in each of first and second secondary electron emissions. The Examiner relies on MacDonald for its disclosure of a scanning electron beam system in which the specimen is mounted on a movable specimen holder 16 (Col. 4, line 36) and a statement at Col. 8, lines 1-7 that the position of impingement of the beam on the specimen can be changed by deflecting the beam or moving the specimen.

Applicants submit that these statements do not suggest that the incident angle of the beam on the specimen be changed. Rather these statements clearly indicate that the beam or the specimen is moved so that the point at which the beam is incident is different. Thus, at Col. 8, lines 2-5, MacDonald describes deflecting the beam or moving the specimen "such that the beam impinges on a point on the surface whose potential is ΔV with respect to the potential at the point at which the beam first impinged . . ."

Plainly, this is not describing the claimed method in which the specimen is rotated in the beam through a range of incident angles so as to detect an orientation having maximum passive voltage contrast. Rather, it is merely describing a system in which the specimen is shifted laterally so that the beam is incident on a different part of the specimen. And

no suggestion is made of applicants' method of repeating the scanning and rotating steps until a maximum passive voltage contrast is observed.

To emphasize these differences, claim 1 has been amended to recite explicitly the step of repeating the steps of scanning the die and adjusting the sample holder to increase the incident angle at least until the passive voltage contrast is maximized. Since these steps are not disclosed in MacDonald, in Weiner et al. or in Liu et al., claim 1 and dependent claims 2-12 are believed patentable.

Likewise, newly added claims 15-18 are believed patentable because they too recite a method for measuring passive voltage contrast that includes the step of repeating the steps of scanning the die and changing the incident angle until the passive voltage contrast is maximized.

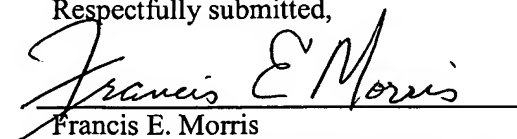
Apparatus claim 13 specifies that the sample holder has an adjustable base and a stand for holding a die. Claim 13 has been amended to specify that the sample holder for the die has a base that can move the die surface through an incident angle that ranges from 45° to more than 75°. Since none of the references provides any details about the construction of the sample holder, claim 13 and dependent claim 14 are believed patentable over these references.

In view of the forgoing remarks, the claims in this application are believed to be in condition for allowance. Such action is respectfully requested. If the Examiner believes a telephone interview would expedite prosecution of this application, he is invited to call applicant's attorney at the number given below.

Aside from the fee for the extension of time, no additional fees are believed to be due for this amendment. If, however, a fee is due, the Patent Office is authorized to charge Morgan, Lewis & Bockius LLP's Deposit Account No. 50-0310.

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Respectfully submitted,


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